A meta-analysis of pharmaceutical care components for diabetes patients provided by community pharmacists

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Background The global prevalence of diabetes mellitus patients has increased over the past few decades. The number and severity of diabetes complications can considerably increase the hazard ratio of mortality and hospitalisations. Diabetes mellitus has grave implications for patients and health systems around the globe.

Purpose The aim of the meta-analysis was the evaluation of randomised controlled trials (RCTs) that included interventions provided by community pharmacists in patients with diabetes, the analysis of each component of the intervention(s) and the description of the training that the pharmacists received.

Method The literature research was conducted in PubMed and in the Cochrane Central Register of Controlled Trials (January 2000 to April 2016) for RCTs with interventions provided by community pharmacists for patients with diabetes. RCTs containing pharmaceutical care or medication therapy management conducted by community pharmacists with real diabetes patients that were published in English or German were included. Corresponding authors were contacted to obtain detailed information about missing data, intervention and training design. Relevant basic information, intervention and training design data were extracted and analysed. The meta-analysis of continuous outcomes was conducted using the random effect model. According to the publications of the analysed studies, missing data and incomplete data were excluded. All statistical analyses were done with R using R studio version 0.99.484. Main outcome measures were the evaluation of the meta-analytical effect of RCTs that included interventions provided by community pharmacists in patients with diabetes and the effectiveness of each component of these intervention(s).

Findings The literature research resulted in eleven eligible studies for further analysis. The corresponding authors of six studies responded to our request and sent their raw data. The calculated meta-analytical effect of 640 analysed patients was an HbA1c-difference of -0.66% with a 95% confidence interval of -0.86 to -0.45%. The analysis of the data revealed that most intervention elements had a significant positive meta-analytical effect on the HbA1c-values of the diabetes patients.

Conclusion Our meta-analysis suggests that the community pharmacists led interventions can improve glycaemic control in patients with diabetes mellitus type 1 and 2. Patient-centred, interdisciplinary interventions were most effective intervention components. Pharmaceutical care interventions should, therefore, include the following components: setting individual goals, communicating with other healthcare professionals, reviewing medication and assessing patients? health beliefs and medication knowledge.